

A note on the ongoing reconstruction of Pratham Shree Mahavihar, Gustal Mahavihar and Vasucchashil Mahavihar at Guita, Patan (Lalitpur)

This note has been prepared in respect to some of the works observed during ongoing reconstruction of Pratham Shree Mahavihar, Gustal Mahavihar and Vasucchashil Mahavihar at Guita, Patan (Lalitpur) - the three mahavihars accommodated within a single square. The fact that these mahavihars were already extant during sixth century is well established. Which is why, it can not be denied nor ignored that the heritage value of these mahavihars is quite high and the gravity and the seriousness of any kind of intervention to these mahavihars should be taken with high sensitivity by everyone involved. No heritage should be assessed merely on structural and/or technical grounds; instead, by taking their various values and dimensions into consideration, their gravity should be established and treated accordingly which would be the only justice that could be done to these heritage structures.

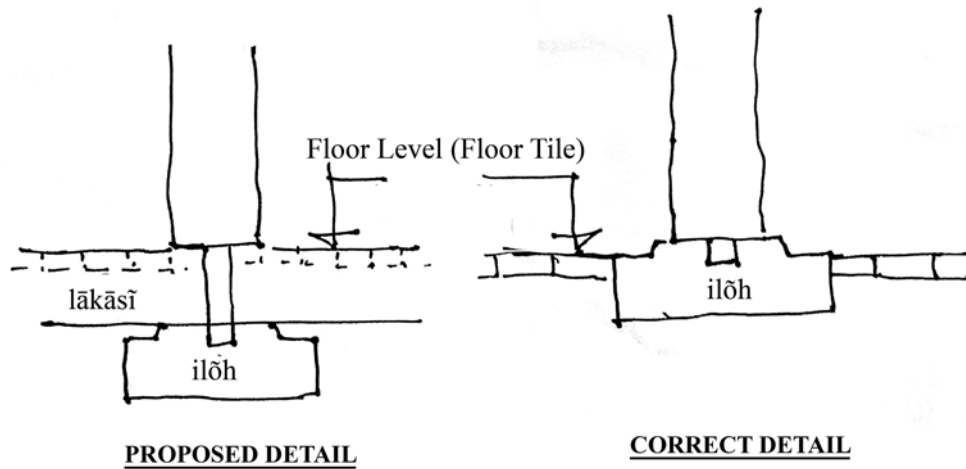
About inappropriate *lākāsī* (wooden base runner for vertical posts)

1. It was observed that in the ground floor of eastern wing of Pratham Shree Mahavihar, the already existing *ilōh* (saddle stones) were being lowered from their original level/position, only to bury them into the ground and top them with horizontal *lākāsī* (wooden base runner) to be finished at floor level. And the vertical posts were planned to be placed upon this *lākāsī* or the horizontal runner. But it might not take too long for a person even with a basic knowledge of traditional construction to realize that this approach is flawed. Laying horizontal *lākāsī* atop already existing *ilōh* (saddle stone) is not only inconsistent with the period detail but also is a grave error from the standpoint of building science and engineering. *Ilōh* are meant to bear vertical upright posts and whenever existing *ilōh* are discovered, it invariably means that these should have upright posts upon them.



2. Connecting the *ilōhs* in the ground floor with horizontal ties of whatsoever nature is not a period detail and which is not practiced anywhere at all. Instances of these 'untied' *ilōhs* being displaced during the events of earthquake is hard to find.
3. An approximately 1.5" high sloping crown on the *ilōh*, which acts as the base of the upright post, slightly raises the base of the post up from the floor level so that any moisture on the floor would not find its way to the base of the post thus preventing the case of wet rot. The proposed detail in Pratham Shree Mahavihar with the base of the post right at the level of the floor, would let the moisture into the base easily, thus creating a

favorable environment for wet rot. The technical team involved might have been misinformed and misled about the floor tiles being water-proof (actually they are not). This might have led them about thinking of lining the base runner with floor tiles to prevent the case of wet rot. This is a totally wrong idea from the very outset.



4. In our tradition, we do have the practice of using *lākāsī* (base runner) to hold the upright posts, but in a different context. These *lākāsī* (base runners) are normally placed at plinth level in *falcā* of *pāti* or *sattals* - where they are placed upon vertical mirror stones so that they will have no contact with the soil below and provisions are made for them to ventilate. Besides the adjacent flooring is dry lined using timber planks (which is used for sitting/resting). The case here is entirely different. The proposed detail with *lākāsī* finished at floor level and with adjacent floor tile finish would not save it too long from wet rot. Coating with black japan (bitumen based paint) or other makeshift methods are only temporary or short term measures.

About *du thām* (inner posts for walls)

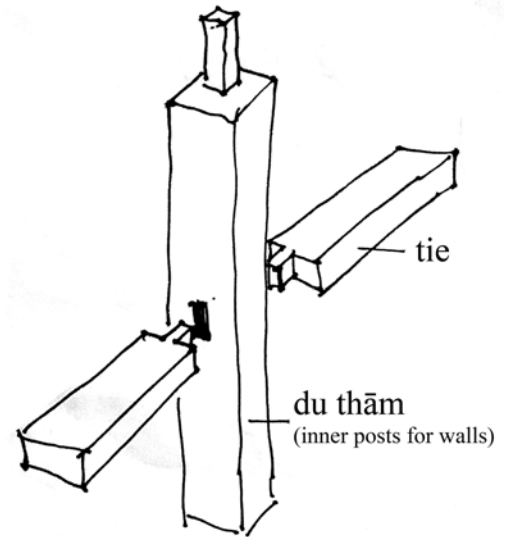
1. Placing vertical *du thāms* (inner posts for walls) and intermediate horizontal ties on the outer and inner surface of the masonry wall is found to be widely practiced during Malla period.
2. The vertical *du thāms* and horizontal ties are seen here to be cross-lapped using half lap joint - which is a flawed detail. Normally the intervention to the vertical posts is kept to a minimum as far as possible. The slots for half lap at intermediate levels of the vertical *du thāms* will only reduce the structural integrity of the post. The horizontal ties are normally attached to the vertical *du thāms* by inserting tenon at the ends of ties into a small mortise hole cut into the vertical *du thāms*. Besides, the thickness of the horizontal ties is also kept equal to the thickness of one course of brick, which will help in adjusting the ties with the brick course



easily. Here the thickness of the horizontal ties appears to be off-sized.

3. There seems to be an attempt to place a layer of horizontal tie at the floor level - which will not survive too long from wet rot.

4. It is also found that the proposed frame of *du thāms* and horizontal ties has been unnecessarily made too dense by placing them at close spacing. Our traditional structure invariably has the load bearing nature where any sensitive use of wooden ties will only enhance the structural performance of the brickwork. In this case, the dense network of frame is making the structure to lose its inherent load bearing nature and the structure is inclined more towards taking up the nature of frame structure. This again is a radical change to the very essence of heritage structure. The decision makers have failed to realize at what point the structure starts losing its load bearing nature and starts embracing the nature of frame structure.



About dismantling the existing foundation

1. It is seen that the foundation walls of Pratham Shree Mahavihar and Gustal Mahavihar have been built anew dismantling the old one. It is widely accepted in conservation practices that the foundation of the heritage structure has to be retained as far as possible. Only when the foundation walls are deformed to the extent that it seriously affects the load bearing capacity, the rebuilding of foundation wall by dismantling the old one is advised. Even when the walls have become undulated from the top, it is advised to open up only few courses on the top and re-level the wall. In the foundation lies the identity of the structure. The history, structural make up, design, proportions etc. can be figured out from the foundation of the structure itself and the complete character of the structure can be traced. E.g. in figuring out the actual form of the Balgopareshwor temple in the middle of Rani Pokhari, the study of its foundation played a pivotal role. Similarly, the fact that Kasthamandap dates back to seventh century was determined from the scientific analysis of its foundation structure. In any case, after assessing all aspects, even if it is established that the foundation is to be dismantled, it needs to be properly documented in detail before dismantling. The haphazard dismantling of the foundation walls of Pratham Shree Mahavihar and Gustal Mahavihar can be considered as serious archaeological errors.

About brick bonding pattern

1. The brick bonding pattern in masonry wall with two courses in header and two courses in stretcher is an old one. It might be in use in Lichchhavi and till Pre Malla period. Similar pattern of brick bonding can be seen in the recently opened wall behind the Kwapa Dyo of Gustal Mahavihar, - which itself proves the antiquity of the structure. It shows that, unless the walls are rebuilt or changed over the time, the whole complex of this mahavihar should have the same



pattern of brick bonding. However, it is seen that in the reconstruction of foundation walls and walls of some sections, this pattern has not been followed. It might seem a trivial detail, but for the character of the structure belonging to Lichchhavi period, this is a significant detail.

2. From the study of the wall thickness and the proportion of the bricks used in ancient structures, it can be figured out that brick are laid in module without having to use brick bats/pieces to complete the course. It clearly shows that there is an inherent relationship between the wall thickness and the size of brick. Hence it is but imperative to figure out the exact size of the brick used in the original section of the structure and use the same sized brick during reconstruction. The original wall thickness needs to be maintained and the masons are to be encouraged to lay the bricks in modules without having to split them.

About discontinuation of mud mortar

1. All traditional structures are found to be built in mud mortar. The deliberate introduction of lime mortar in heritage structures can be owed to the general tendency to incline towards easily available materials. But it has in itself destroyed the major attributes of traditional heritage structures. The structures composed from natural/organic materials earned the heritage status over time; stayed intact for many centuries, and even if they collapsed out of their age, they were re-erected reusing the same/similar materials, but always the natural one (i.e. organic in nature). Cyclical renewal might not be a new term in conservation fraternity. The recyclable and reusable nature of building material has always added value to our heritage. Lime mortar is not something that can be reused.

About the conservation of technology

1. In conservation practices, out of all other principles, we also stress on the conservation of material and technology. These are something that have been tried, tested and refined over the course of history and even civilization. Living with frequent encounter with great earthquakes, it is doubtful that the past builders were indifferent towards improving earthquake resilience of traditional structures. Modern studies have shown that traditional structures are equally resilient to earthquake forces. However, as it is rightly said, we should not judge a fish by its ability to climb a tree. The materials, the details, the methods and techniques are all part of the technology - which needs to be retained as far as possible.

Lastly,

1. In the arena of heritage, it is always stressed that the heritage received from the past should be handed over to the future generation in a form that is as original as possible. All heritage workers should acknowledge their inherent duty and should not shy away from accepting the heritage structures and the details therein as something that bears a lineage to a highly refined/cultured tradition and something that is worthy of all sensitivity and respect.
2. These notes are expressed entirely as a citizen's concern over Nepali heritage. They are not guided by any influence and no personal offence is intended whatsoever. Discretion is highly requested.

Thank you.

(August 2022)